

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
RELIEF VALVE, CONDENSATE WATER, ITEM 134 ----- SV769403-6 (1)	2/1R	134FM02 Fails closed. Diaphragm sticks to seat, plunger jams, filter clogs.	END ITEM: Unable to deliver separator water to the reservoir. GFE INTERFACE: Water carryover into the vent flow ducted to the helmet. MISSION: Terminate EVA. Possible helmet fogging. CREW/VEHICLE: None for single failure. Possible loss of crewman with loss of SOP. TIME TO EFFECT /ACTIONS: Minutes. TIME AVAILABLE: Minutes. TIME REQUIRED: Seconds. REDUNDANCY SCREENS: A-PASS B-PASS C-PASS	A. Design - Teflon coating the valve seat minimizes stiction force on the elastameric silicone diaphragm. The seat compression is controlled by a metal to metal stop. The plunger and bore are teflon coated to reduce friction. B. Test - Component Acceptance Test - Relief pressure and performance tests are performed per AT-E-134. In the relief test the valve must crack at 2.5-3.2 psid. Crack is defined as a minimum flow through the valve of 1 cc/min. During the performance test the valve must flow 13.2-14.2 lbs/hr water at a pressure differential of 3.2-3.5 psid. PDA Test - During fan pump testing per SEMU-60-010 it is verified that the condensate water relief valve will maintain a differential pressure of 3.1-2.7 psid between the separator outlet and the feedwater circuit. Certification Test - Certified for a useful life of 20 years (ref. EMUM-1430). C. Inspection - The diaphragm sealing surface that opens and closes flow to the valve seat orifice is 100% inspected to meet dimensional requirements as well as being visually inspected at 10x magnification for any surface defects. The valve seat is 100% inspected for being properly teflon coated. The interfacing surfaces between the plunger and the valve housing are 100% inspected to meet dimensional and surface finish requirements, as well as for being properly teflon coating. D. Failure History - H-EMU-100-A009 (7-13-84) The Delta P across the 134 valve was higher than specification. The out of spec. measurement was produced by measuring psid with an absolute pressure transducer. Corrective action: A differential pressure transducer will replace the absolute for PDA testing. J-EMU-134--001 (10/14/94) The 134 Water Relief Valve S/N 027 failed closed due to a clogged inlet filter which restricted flow to the valve causing water carryover into the vent loop. The filter contamination was identified as silicone grease and polyester fabrics from unknown sources. No corrective action taken. B-EMU-134-A001 (5/4/95) - Water carryover in the vent loop caused by clogged Item 134 valve filter and gasket (shim) deforming and blocking the inlet. The filter was clogged with braycote grease (from o-rings) and fibers from vent loop. Filters will be replaced every 2 years and gasket will be redesigned to prevent deformation. E. Ground Turnaround - Tested for non-EET processing per FEMU-R-001, Fan/Pump/Separator/Vent Flow Sensor Performance. FEMU-R-001 Para 8.2 EMU Preflight KSC Checkout for EET processing.

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F. Operational Use -
Crew Response -
PreEVA: Trouble shoot problem, if no success, consider EMU 3 if available. EMU go for SCU without fan.
PostEVA: Open helmet purge valve until helmet can be doffed.
EVA: If helmet fogging occurs or significant amounts of water detected exiting helmet vent duct, terminate EVA. Open helmet purge valve.
Training - No training specifically covers this failure mode.
Operational Considerations -
Flight rules define EMU go to remain on SCU (available for rescue if required).
EVA checklist procedures verify hardware integrity and systems operational status prior to EVA. Real Time Data System allows ground monitoring of EMU systems.

EXTRAVEHICULAR MOBILITY UNIT
SYSTEMS SAFETY REVIEW PANEL REVIEW
FOR THE
I-134 CONDENSATE WATER RELIEF VALVE
CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

Prepared by: *Alan P. 3/27/02*
HS - Project Engineering

Approved by: *KMB*
~~SSM~~
LSS

M. Smyde
HS - Reliability

W. P. ...
~~SSM~~

Alan P. for RME
HS - Engineering Manager

H. ...
~~SSM~~

Frank G. ...
~~MOB~~

J. ...
~~SSM~~

F. ...
Program Manager